COUNTY VULNERABILITY INDEX

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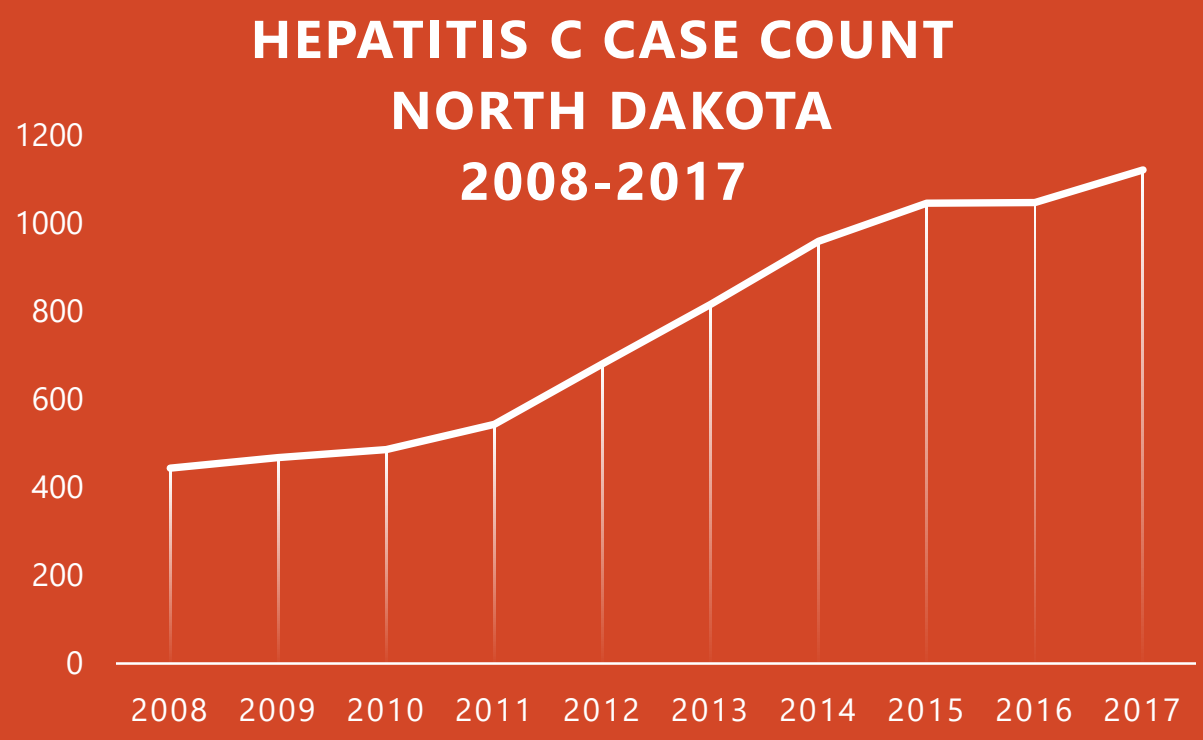
OBJECTIVES

- Describe the current epidemiology of HIV and Hepatitis C in North Dakota
- Identify the counties in North Dakota that are at the highest risk for a potential HIV/HCV outbreak related to injection drug use.
- Identify community prevention efforts to limit the risk of an HIV/HCV outbreak.

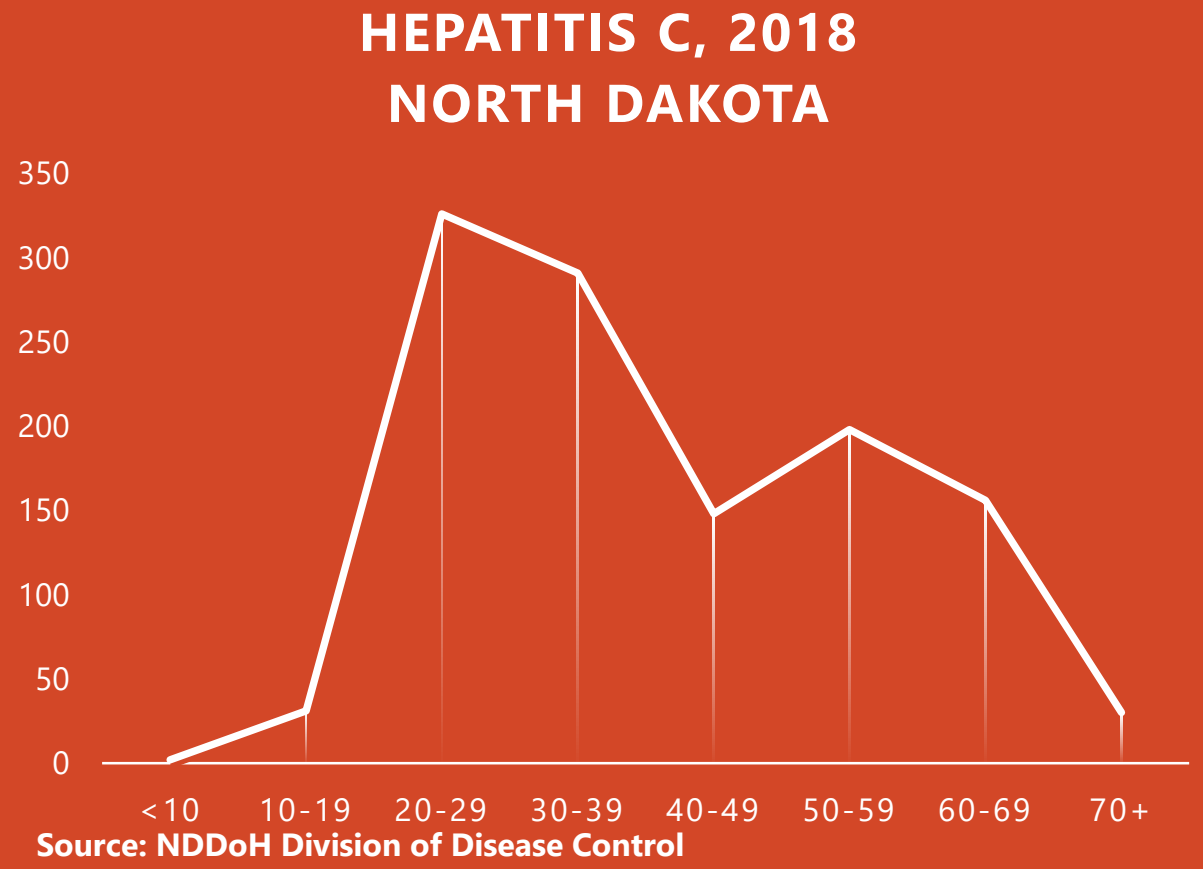
BACKGROUND

- Hepatitis C (HCV) infections more than doubled in the past decade in North Dakota
  - HCV infections among people aged 25-34 years increased **45%** from 2013-2017
- It is estimated that **2.4 million** adults are currently infected with HCV in the United States



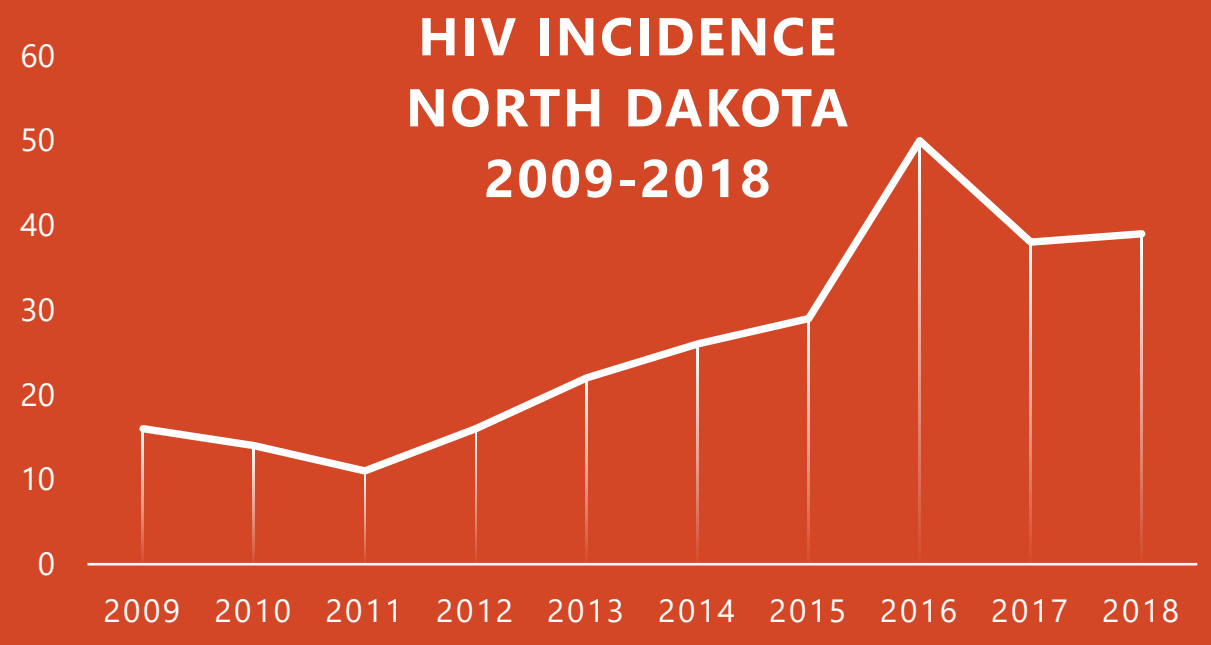
Source: NDDoH Division of Disease Control

The younger population has passed the baby boomers in Hepatitis C case counts



- HIV incidence has more than doubled in the past decade in North Dakota

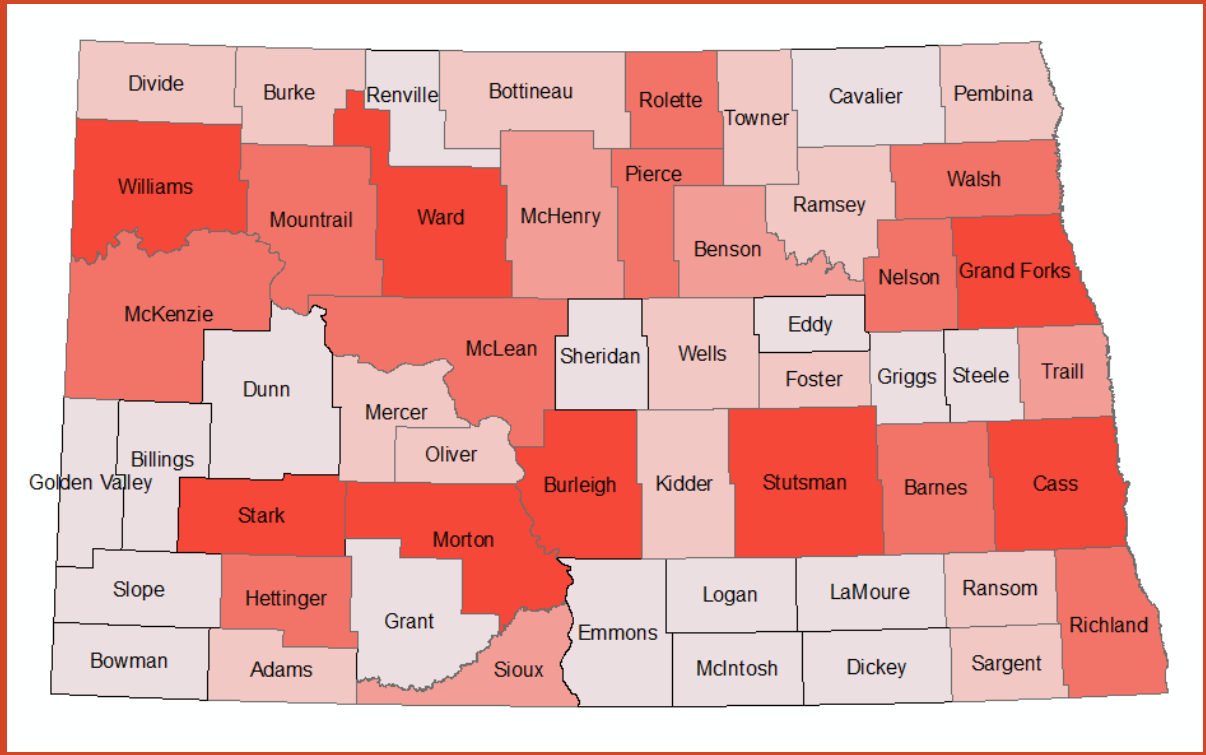
- An estimated 1.1 million individuals living with HIV/AIDS in the United States



Source: NDDoH Division of Disease Control

- As of December 31, 2018 there are 457 people living with HIV/AIDS in North Dakota

- 12% reported injection drug use as a risk factor

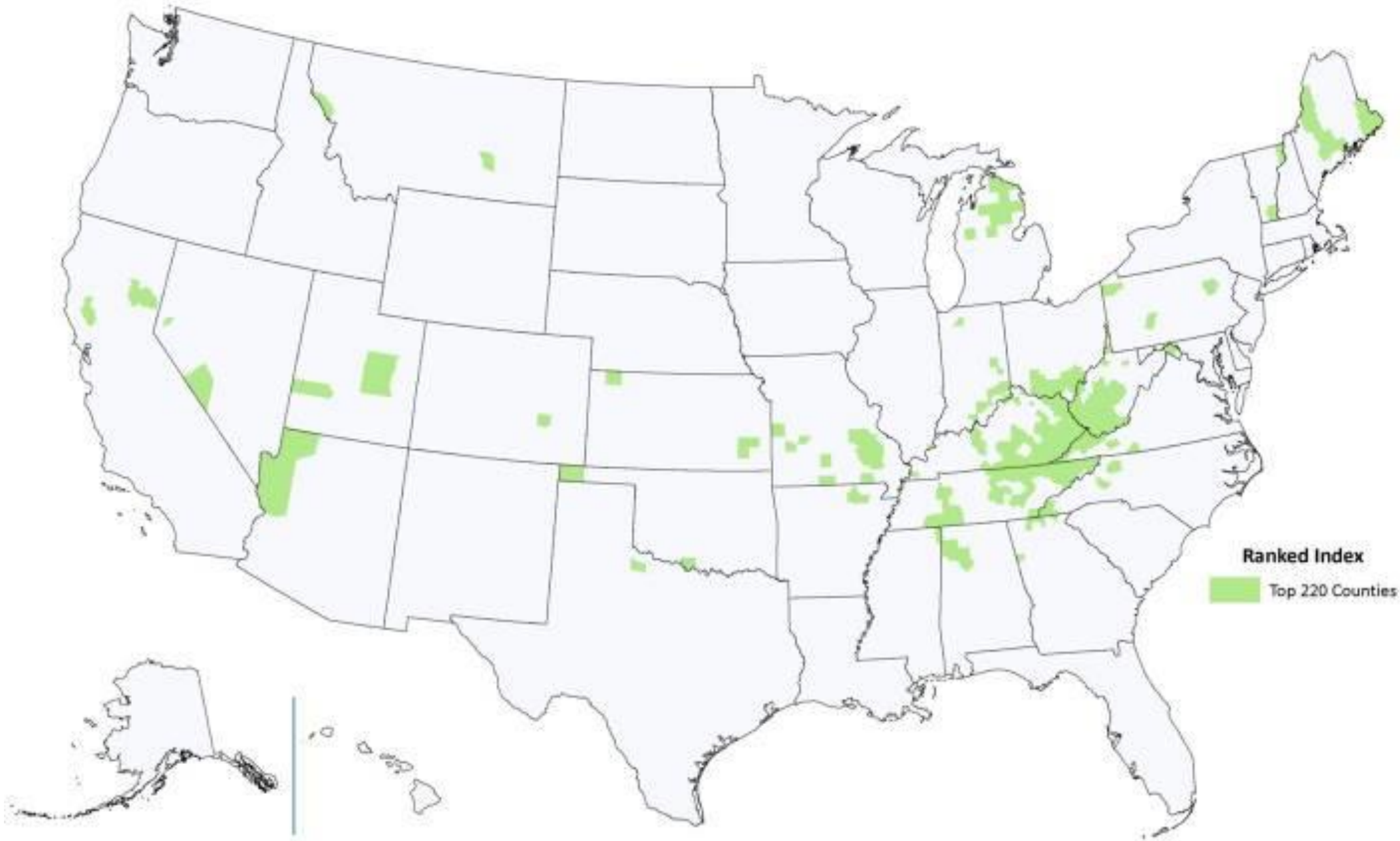


SCOTT COUNTY, IN

- 2015
  - **227** infected with HIV people in a county the size of Williams County, ND.
    - In 2017, Williams County had **1** new diagnosis and **14** total people living with HIV.
  - Prevalence of self reported IDU was **91.8%** among new HIV infections.
  - **92.3%** co-infected with **HCV**

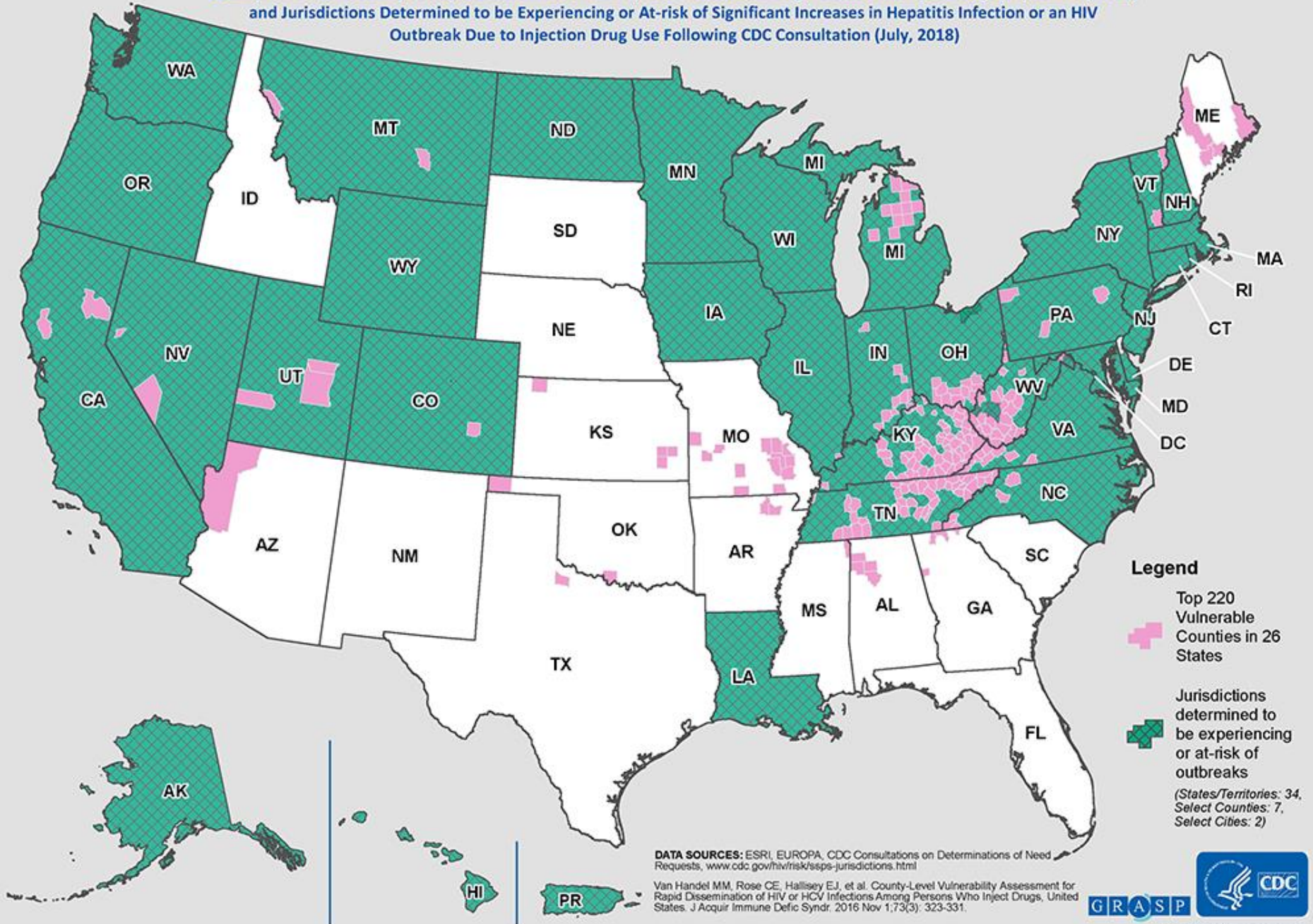
CDC VULNERABILITY INDEX

- Multistep analysis to identify indicator variables highly associated with IDU (acute hepatitis C infection).
- Used these indicator values to calculate vulnerability scores for each county to identify which were most vulnerable.


Ranked Index
Top 220 Counties

Vulnerable Counties and Jurisdictions Experiencing or At-Risk of Outbreaks

County-level Vulnerability to Rapid Dissemination of HIV/HCV Infection Among Persons who Inject Drugs (September, 2015) and Jurisdictions Determined to be Experiencing or At-risk of Significant Increases in Hepatitis Infection or an HIV Outbreak Due to Injection Drug Use Following CDC Consultation (July, 2018)



DATA SOURCES: ESRI, EUROPA, CDC Consultations on Determinations of Need Requests, www.cdc.gov/hiv/risk/ssps-jurisdictions.html

Van Handel MM, Rose CE, Hallisey EJ, et al. County-Level Vulnerability Assessment for Rapid Dissemination of HIV or HCV Infections Among Persons Who Inject Drugs, United States. J Acquir Immune Defic Syndr. 2016 Nov 1;73(3): 323-331.

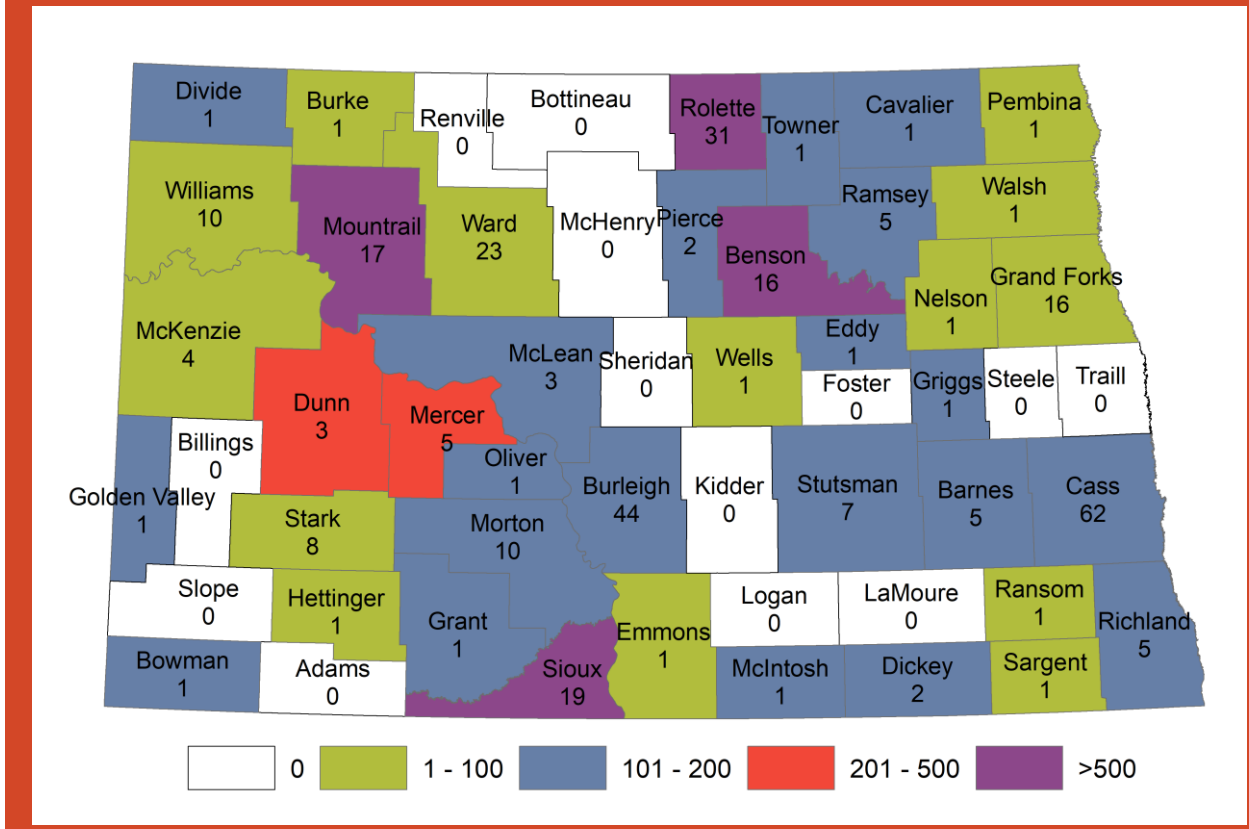
GRASP

CDC

HOW DOES THIS TRANSLATE FOR ND?

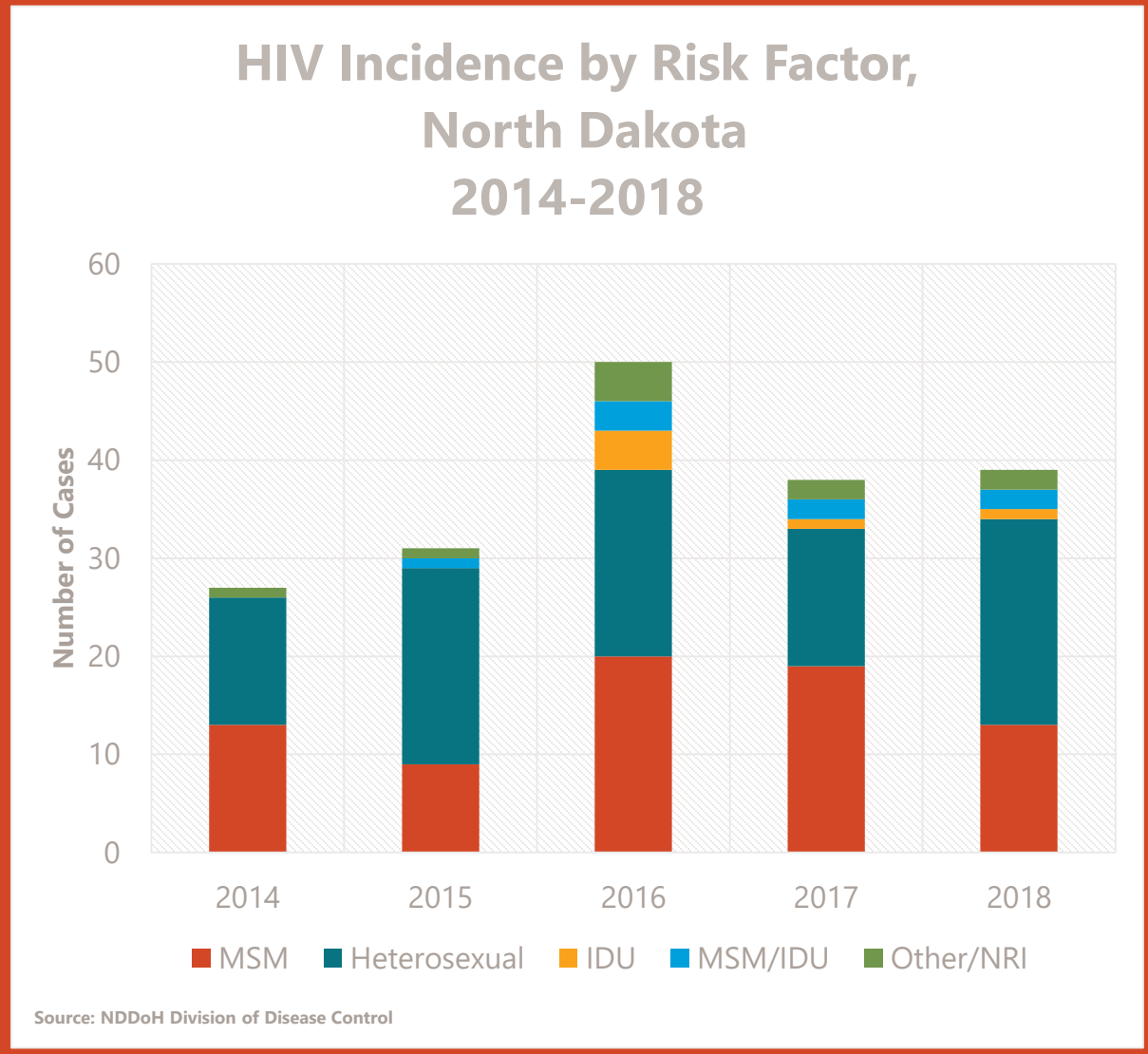
- Enhanced surveillance (2017) shows that of people **35 and under** who were asked about risk factors **88%** reported injection drug use as their primary risk.

Hepatitis C Rates for 15-34 age group per 100,000 by county, 2016-2017



HOW DOES THIS TRANSLATE FOR ND?

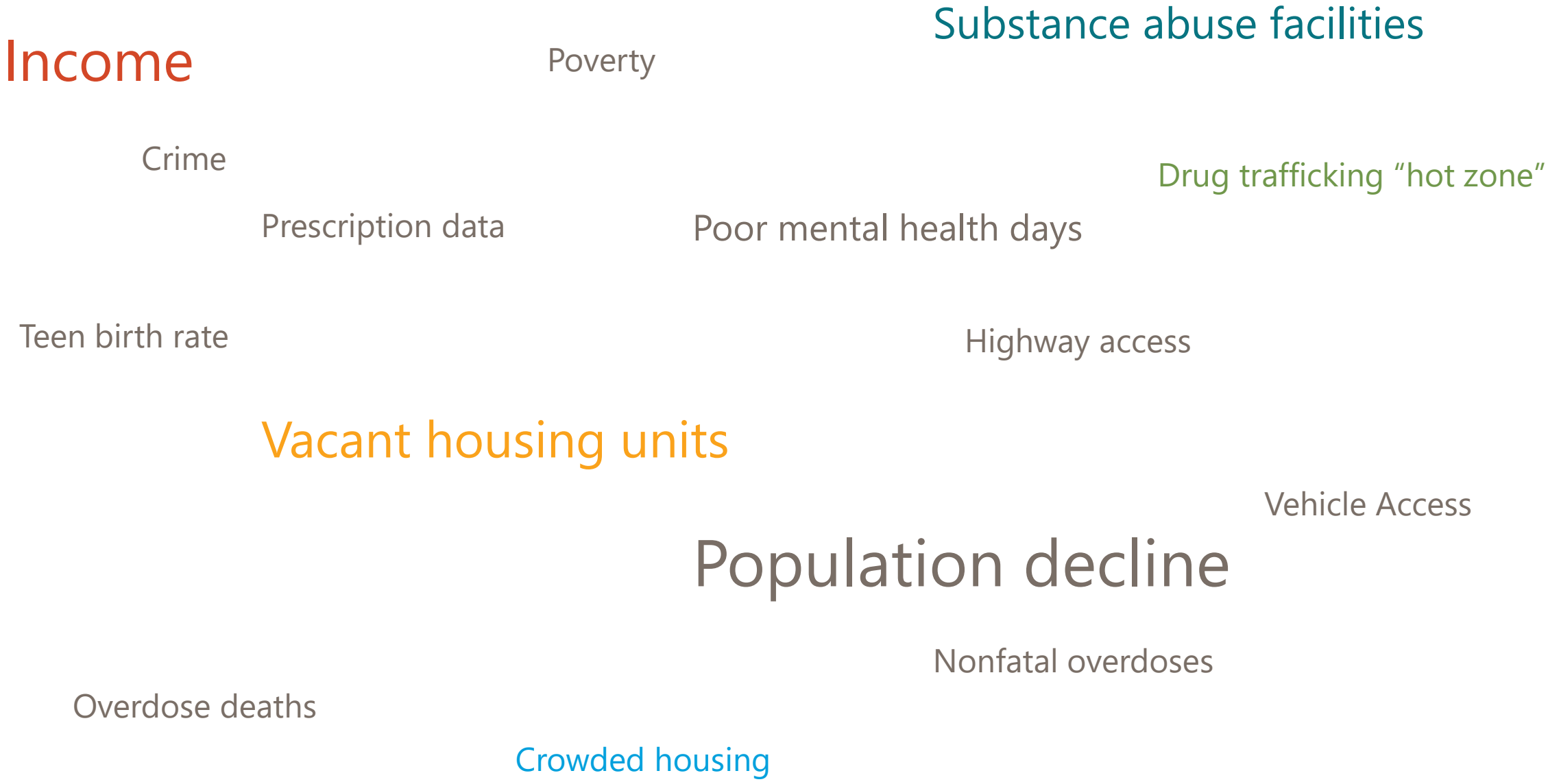
- IDU reported as a risk factor for new **HIV** infection reported in 2016, 2017 and 2018
  - Rarely reported previous to that.



Data Criteria	Explanation
Newly diagnosed with hepatitis C in 2016 & 2017	The most current data year for local/national datasets
Between the ages of 15 and 34	Enhanced surveillance data shows that injection drug use is the primary risk factor for this age group
Disease status of acute, chronic or currently infected	Includes individuals with a quantitative RNA result, confirming hepatitis C diagnosis
Not diagnosed in a correctional facility	Limits bias for counties that house correctional facilities

ND VULNERABILITY INDEX

- Chronic Hepatitis C in persons under 35 as proxy for IDU
- Included variables such as drug overdose mortality, access to prescription opioids, drug related criminal activity and sociodemographic characteristics among others


Substance abuse facilities
Income
Poverty
Crime
Drug trafficking “hot zone”
Prescription data
Poor mental health days
Teen birth rate
Highway access
Vacant housing units
Vehicle Access
Population decline
Nonfatal overdoses
Overdose deaths
Crowded housing

DATA SOURCES

- Census – American Community Survey
- Behavioral Risk Factor Surveillance System
- North Dakota Department of Health
  - Disease Control
  - Vital Records
- North Dakota Department of Human Services
- Prescription Drug Monitoring Program
- Office of the Attorney General
- Drug Enforcement Agency

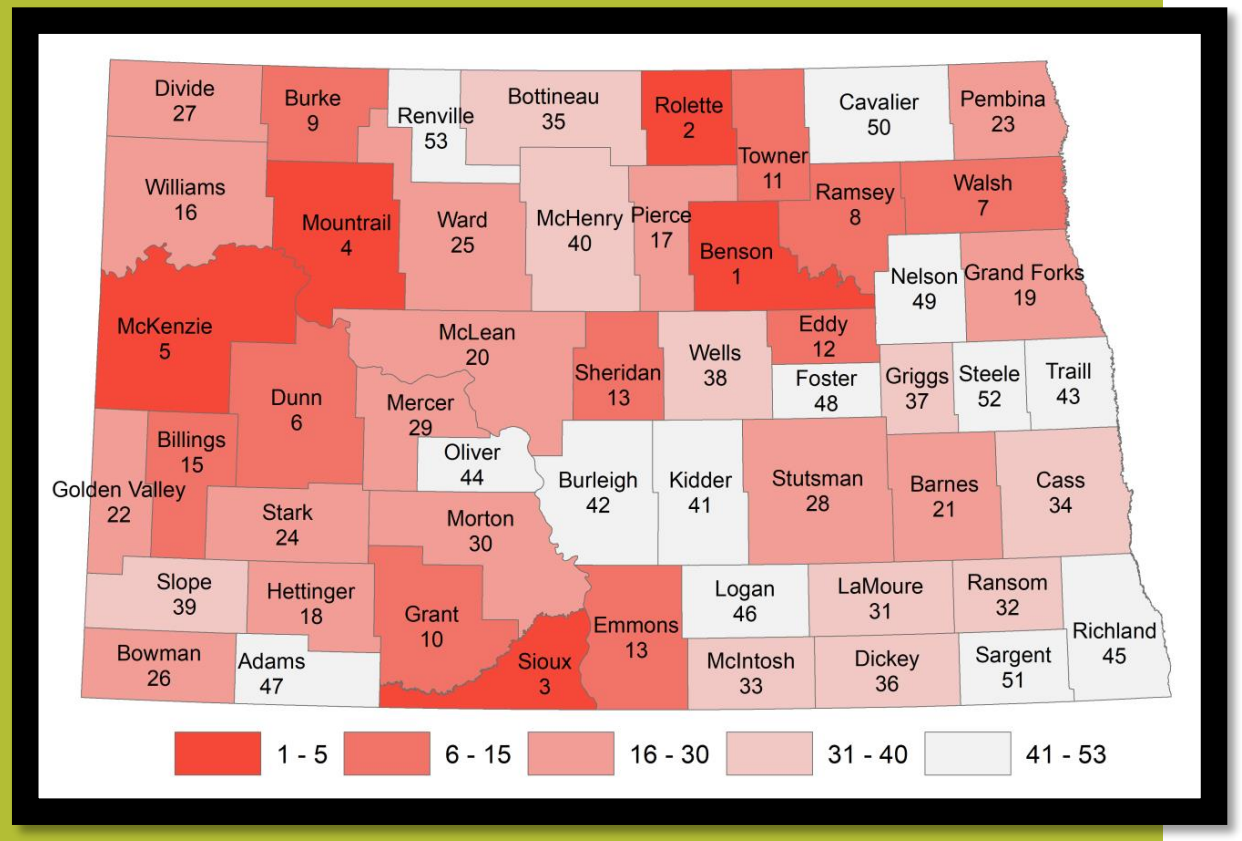
METHODS

- Multilevel regression modeling
- Identify indicators with the **strongest** associations

PRIMARY MODEL

1. Percent Uninsured
2. NCHS Urban/Rural Classification
3. Percent Poverty
4. Teen Birthrate
5. Gonorrhea Rate
6. Percent Unemployed
7. Poor Health Rating
8. No Vehicle Access
9. No High School Diploma

PRIMARY MODEL



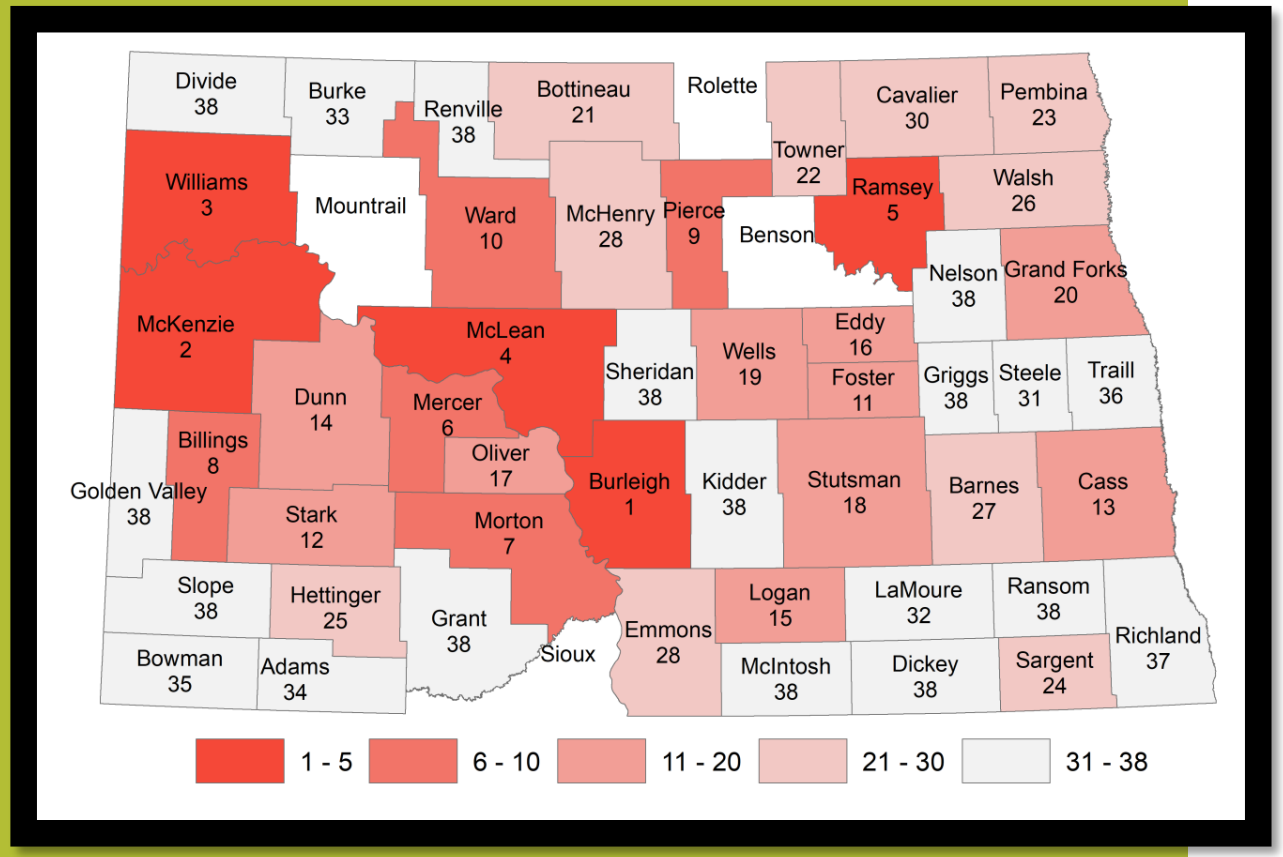
1. Benson County
2. Rolette County
3. Sioux County
4. Mountrail County
5. McKenzie County

SECONDARY MODEL

- Contained additional variables with high-epidemiologic association with injection drug use that were not indicated in the primary model
- The counties analyzed were limited only to the counties in which this data was available.

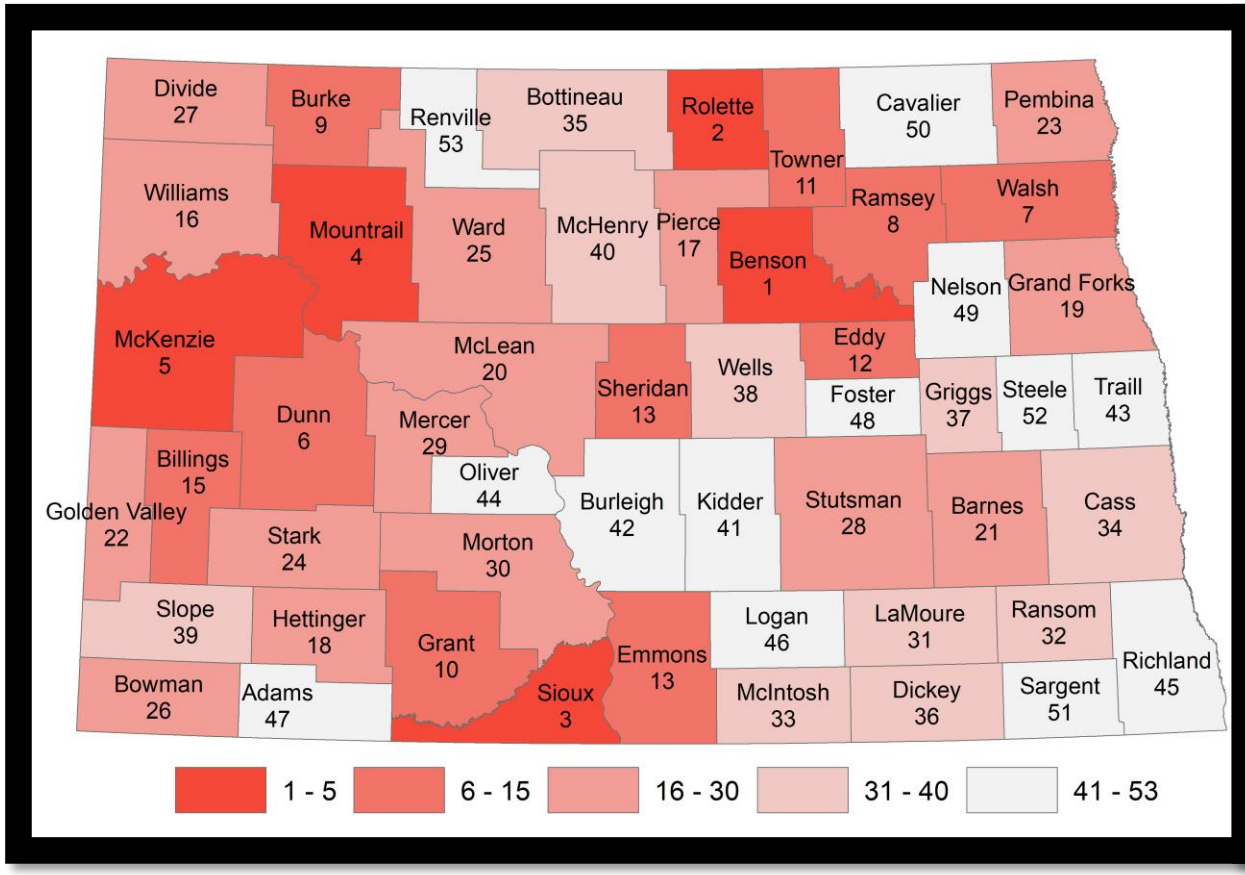
1. Amphetamine/Methamphetamine Incidents

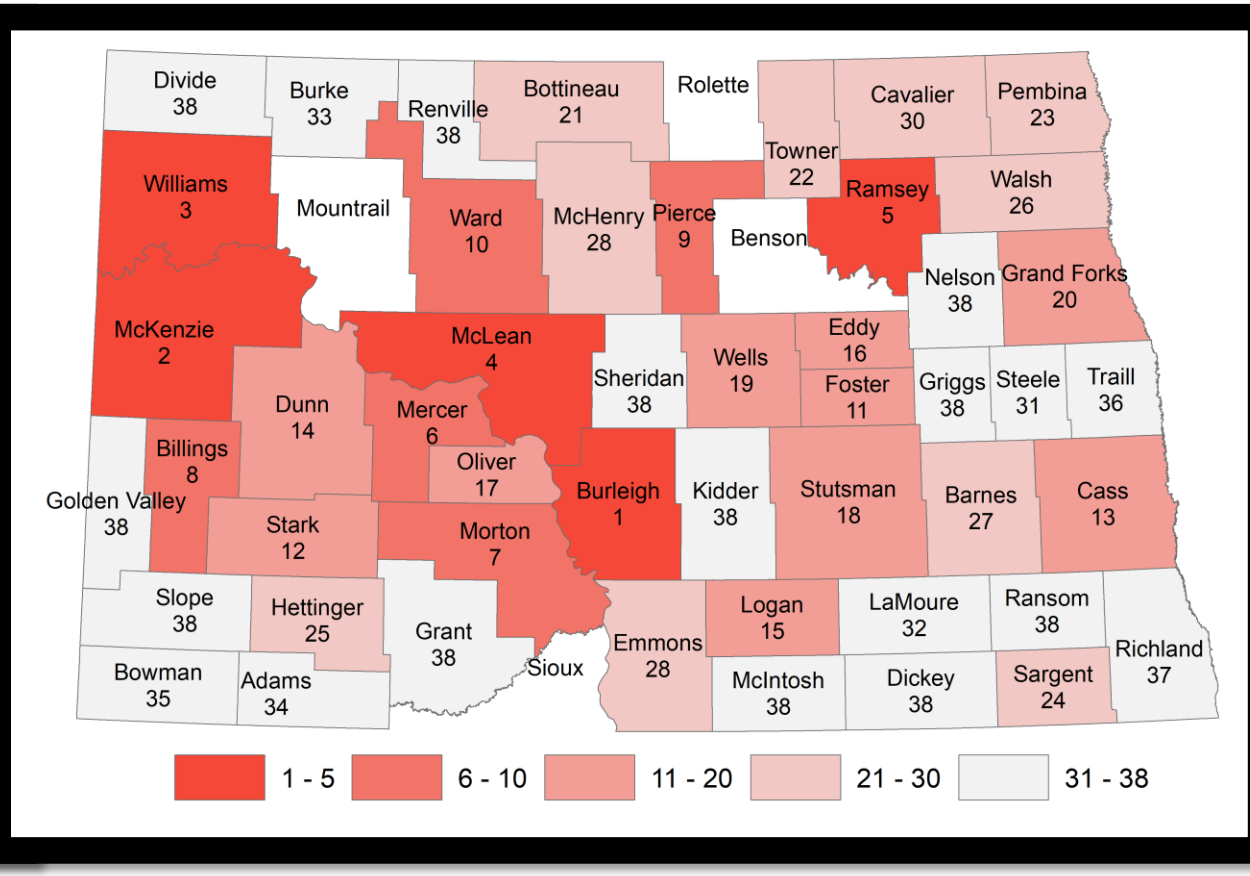
SECONDARY MODEL



1. Burleigh County
2. McKenzie County
3. Williams County
4. McLean County
5. Ramsey County

ARE YOU SURPRISED BY YOUR COUNTY? WHY OR WHY NOT?





NOW WHAT...

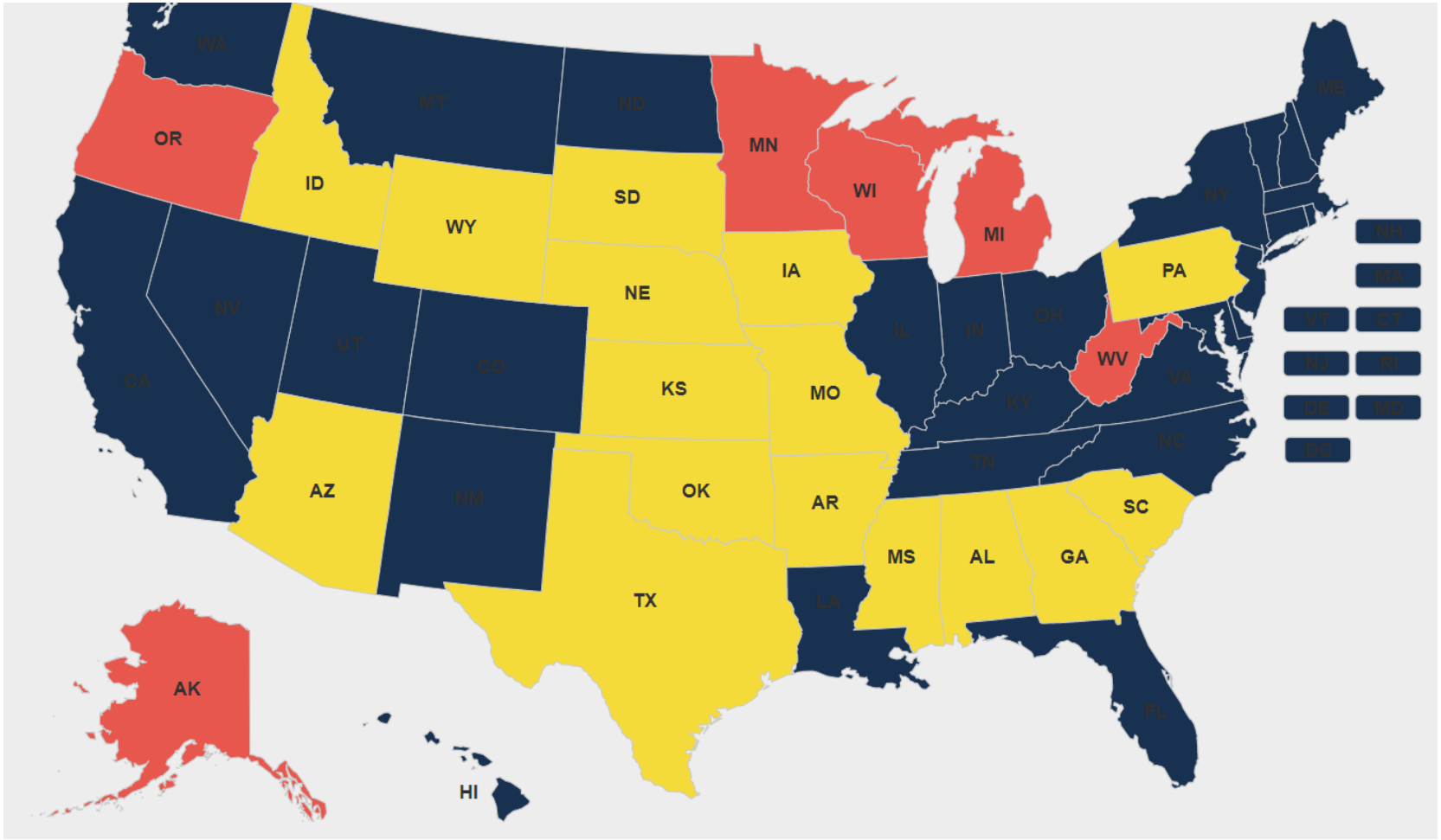
- Syringe Service Programs
- Increase HIV & HCV testing among those at risk
- Linkage to care
- Cluster detection

SSP IN UNITED STATES—2018

No Laws Prohibit

Laws Explicitly Permit

Would Require Legislative Action



SSPS PROVIDE MANY SERVICES

- Free Sterile Syringes to Persons Who Inject Drugs
  - Reduce the likelihood of reuse and sharing.
- Safe Disposal of Biohazard/Reduce Risk of Needle-Stick Injury
- Screening for HIV, STDs and Viral Hepatitis
- Safer Sex Supplies
- Referral to Substance Use Treatment
- Medications to Prevent Overdose….

INCREASE TESTING

LINKAGE TO CARE

- Hepatitis C has curative treatment
- HIV has therapeutic treatment
- 83% of North Dakotans known to be living with HIV are in care and virally suppressed

CLUSTER DETECTION

- What is a cluster?
- How do we know if our communities are experiencing clusters of infections?

Public Health Monitoring Leads to Action

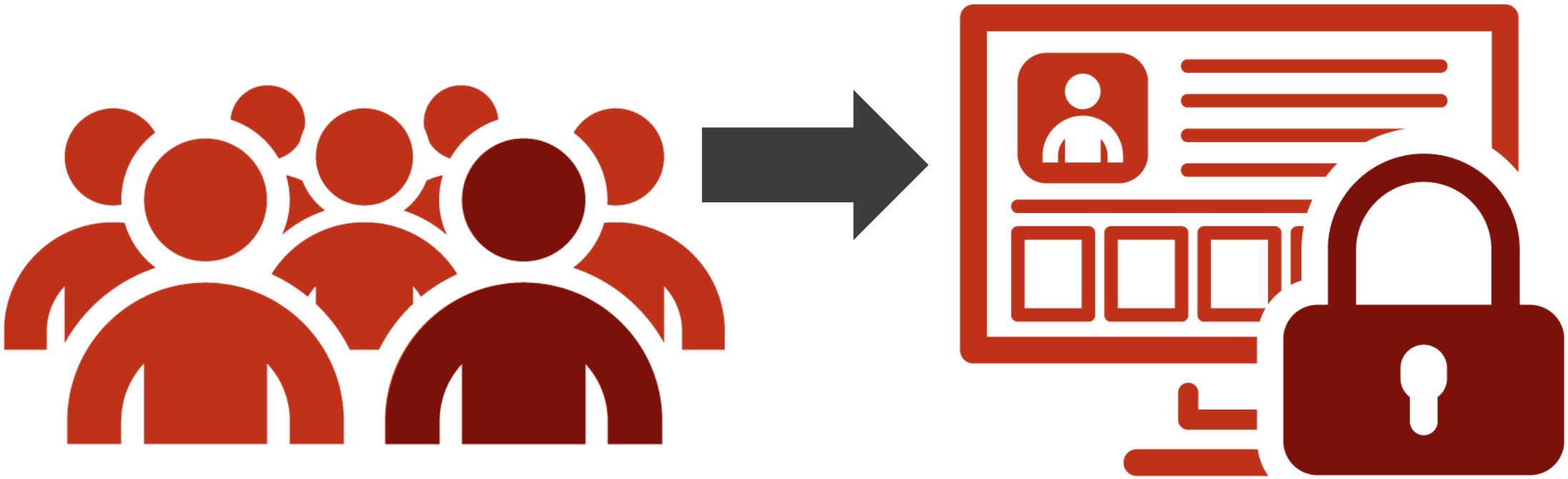
- Monitoring and reporting of illness and other health conditions
- Called public health surveillance

What Does Public Health Surveillance Do?

- Detect developing outbreaks
- Help people at risk to stay well
- Target limited resources to the people and areas that need them most

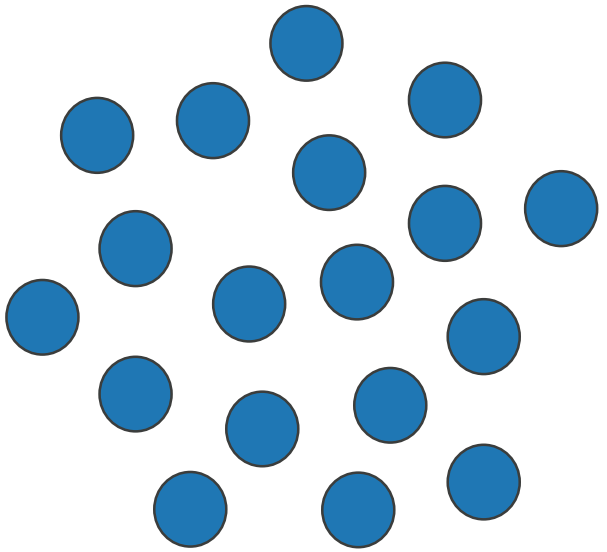
HIV PUBLIC HEALTH DATA COLLECTION HAS EVOLVED OVER TIME

HIV PUBLIC HEALTH DATA ARE STRICTLY PROTECTED



HOW DO WE USE PUBLIC HEALTH DATA?

NETWORK WHERE HIV IS SPREADING QUICKLY



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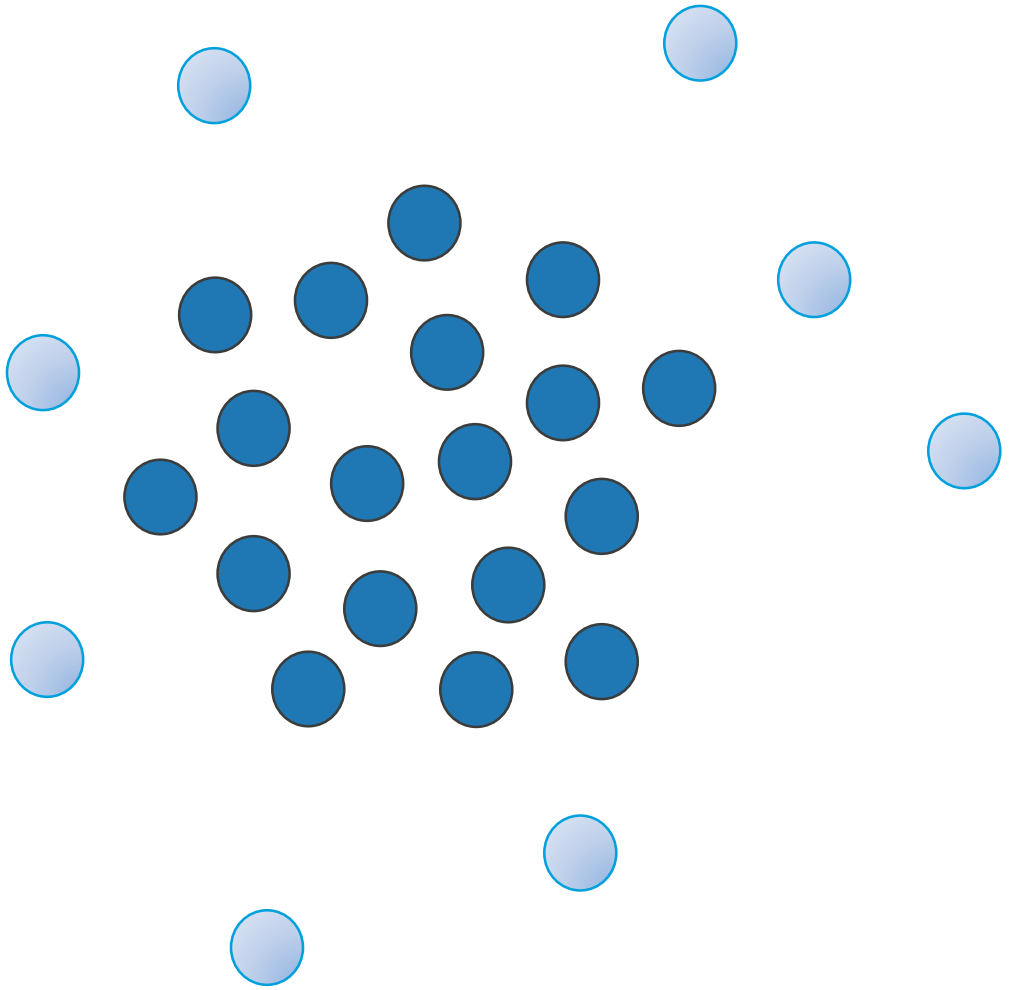

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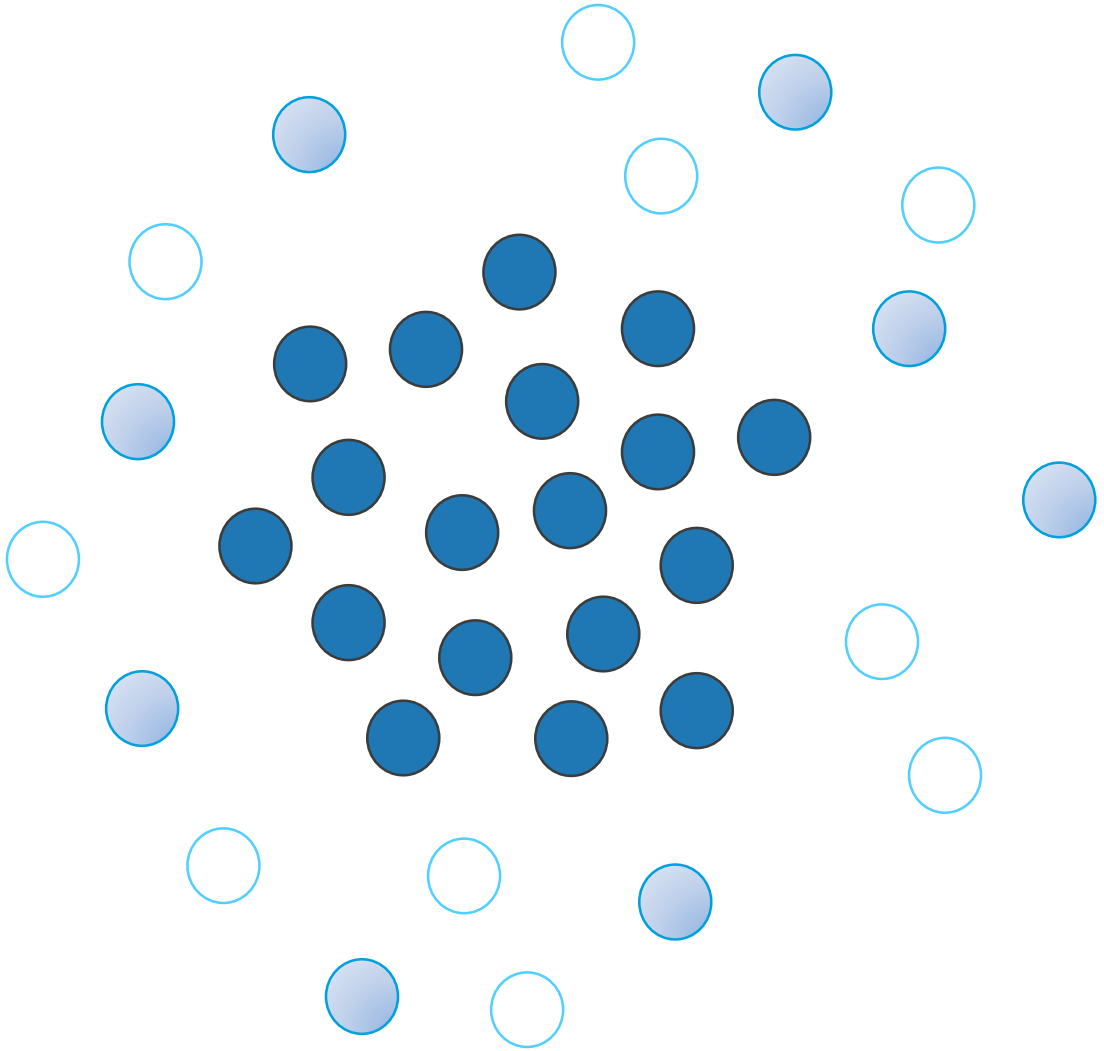
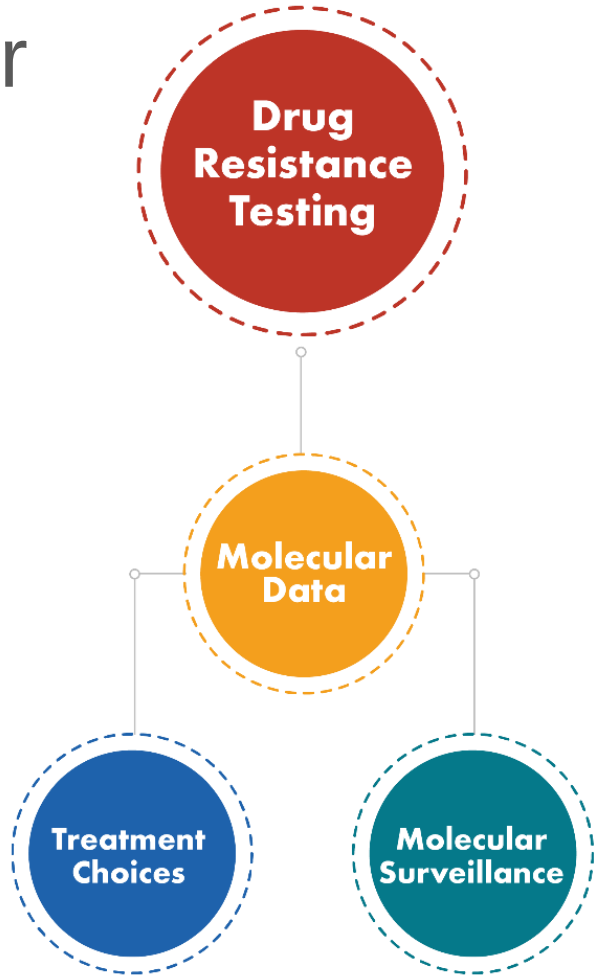


WHAT DATA DO WE USE TO FIND THESE NETWORKS?

- As part of HIV care, health care providers order testing to learn what treatments will work best for a person's HIV strain
  - Called drug resistance testing
  - This testing involves determining the genetic sequence of the virus (NOT the person)
    - We sometimes call this 'molecular data'
- Checking for drug resistance in the population



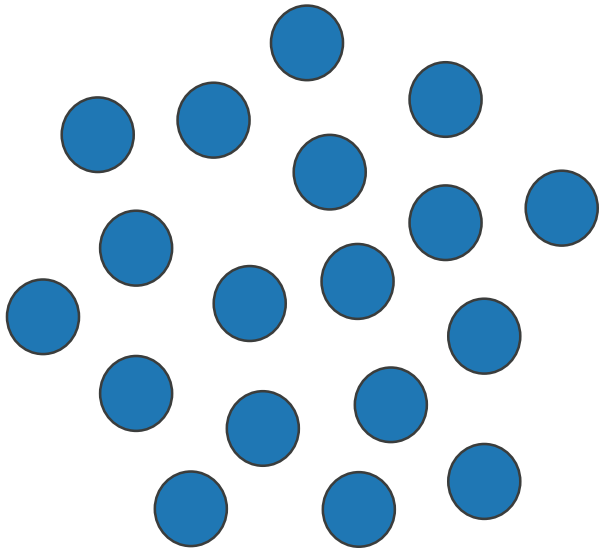
HOW ARE MOLECULAR DATA USED?

- HIV mutates over time
  - Leads to changes in the genetic sequence of the virus

- Analyze the sequences, or molecular data, to find large groups of infections that are very similar
  - Indicates that HIV is spreading quickly

WHAT IS DONE WITH MOLECULAR DATA

- Reach out to these networks
  - Provide the services they need
  - Understand barriers to care and prevention
  - Develop approaches to overcome barriers



EXAMPLE 1: SAN ANTONIO, TEXAS

Molecular cluster members:

n=24

EXAMPLE 1: SAN ANTONIO, TEXAS

Molecular cluster members:

n=24

Other people who were sexual or needle sharing partners of initial 24 persons or their partners:

n=87

EXAMPLE 1 (CONTINUED): AN OPPORTUNITY TO IDENTIFY AND ADDRESS GAPS IN PREVENTION

- Health alert to providers educated on HIV diagnostic testing and acute infection
- Health alert educated on PrEP, funds redirected to scale up access to PrEP in specific regions of the city
- New coalition of community, providers, and public health → sign-on as a Fast Track City
  - Efforts to reduce stigma, improve care, eliminate new cases of HIV

EXAMPLE 2: WEST VIRGINIA

- Increase in HIV diagnoses among gay and bisexual men in an area
  - with typically few HIV diagnoses.
  - where injection drug use is common.
- Concerned about possibility of HIV spread into communities of people who inject drugs
  - Conducted in-depth interviews
  - Relocated HIV testing sites
  - Increased awareness of HIV testing
  - Established syringe service programs

EXAMPLE 3: MEDIUM-SIZED CITY IN NORTHEASTERN STATE

- Healthcare provider called health department to report concern about increased diagnoses among heterosexuals
- Laboratory (molecular) data showed rapid transmission
- Health department established PrEP provider in region
- Held a regional provider meeting
- Expanded HIV testing in jails and reproductive health clinics

EXAMPLE 4: MIDWESTERN STATE

- Laboratory (molecular) data identified growing network of rapid transmission
  - Virally suppressed, but continued to grow
  - Health department and HIV providers in the area worked with their patients to increase testing, linkage to care, prevention

DISCUSSION

QUESTIONS?

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